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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/676,887	09/29/2000	Roger Rogard	15685P031	1596

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EXAMINER

TRAN, TUAN A

ART UNIT PAPER NUMBER

2682

DATE MAILED: 04/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/676,887

Applicant(s)

ROGARD ET AL.

Examiner

Tuan A Tran

Art Unit

2682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-52 and 71-78 is/are pending in the application.
- 4a) Of the above claim(s) 53-70 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-52 and 71-78 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-17, 19-49, 51-52 and 71-78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamalainen et al. (6,167,248) in view of Kohno et al. (6,763,062).

Regarding claims 1-2, 6, 10-12 and 15, Hamalainen discloses a system and method in a wireless communication system (See fig. 1B) comprising: providing a downlink channel PCH, AGCH, TCH for transmitting downlink data from a cellular base station to a mobile terminal, wherein the downlink channel is a downlink traffic channel for communicating downlink traffic data including voice (See figs. 2, 9-10 and col. 10 line 35 to col. 11 line 14); providing an associated channel RACH for the base station to receive an uplink response signal from the mobile terminal in response to the downlink data, the associated channel associated, and having a predetermined relationship, with the downlink channel (See figs. 2, 9-10 and col. 10 line 35 to col. 11 line 14, col. 13 line 9 to col. 14 line 24); providing an uplink data channel TCH to receive uplink data signal from the mobile terminal, the uplink data channel distinct from the associated channel (See figs. 2, 9-10 and col. 10 line 35 to col. 11 line 14); receiving the uplink response

Art Unit: 2682

signal at the base station, wherein the sending of the uplink response signal is independent of any uplink traffic data being sent from the mobile terminal to the base station (See figs. 9-10 and col. 13 line 9 to col. 14 line 24); and receiving uplink data from the mobile terminal on the uplink data channel TCH (See figs. 9-10), wherein communication on the downlink, uplink and associated channels is frame-by-frame (See col. 4 lines 33-41). However, Hamalainen does not mention that the base station having a smart antenna system and comprising the means of determining a downlink smart antenna processing strategy using the received uplink response signal in the most recent frame and sending downlink data from the base station to the mobile terminal using the determined downlink smart antenna processing strategy. Kohno teaches the base station of a radio communication system (See fig. 1) having a smart antenna system and comprising the means of determining a downlink smart antenna processing strategy using the most recent received uplink signal and sending downlink data from the base station to the mobile terminal using the determined downlink smart antenna processing strategy (See figs. 1-2, 7 and col. 4 line 47 to col. 6 line 33, col. 10 lines 3-52). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Kohno in modifying the base station of the communication system as disclosed by Hamalainen by adding a smart antenna system and means of determining a downlink smart antenna processing strategy using the received uplink response signal in the most recent frame and sending downlink data from the base station to the mobile terminal using the determined downlink smart antenna processing strategy for the advantage of enhancing the QoS

Art Unit: 2682

(quality of service) of the system by improving transmission/reception signal quality in both directions.

Claims 21, 25, 29-31, 33-34, 38, 42-44, 47 and 71-72 are rejected for the same reasons as set forth in claims 1-2, 6, 10-12 and 15, as apparatus.

Regarding claim 3, Hamalainen & Kohno disclose as cited in claim 1.

Hamalainen further disclose the uplink, downlink, and uplink associated channels are conventional TDMA channels (See col. 4 lines 33-40, col. 12 lines 39-42).

Claims 22 and 35 are rejected for the same reasons as set forth in claim 3, as apparatus.

Regarding claims 4-5, Hamalainen & Kohno disclose as cited in claim 1.

However, they do not mention that the uplink, downlink and uplink associated channels are FDMA or CDMA channels. Since FDMA and CDMA are well known communication protocols in the art; therefore, it would have been obvious to one off ordinary skill in the art at the time the invention was made to have the system, as disclosed by Hamalainen & Kohno, utilized FDMA or CDMA for the advantage of expanding the capability of the system to various communication protocols.

Claims 23-24 and 36-37 are rejected for the same reasons as set forth in claims 4-5, as apparatus.

Regarding claims 7-8, Hamalainen & Kohno disclose as cited in claim 1. Kohno further discloses the mobile terminal including a second smart antenna that includes a plurality of antenna elements (See col. 4 line 65 to col. 5 line 5).

Art Unit: 2682

Claims 26-27 and 39-40 are rejected for the same reasons as set forth in claims 7-8, as apparatus.

Regarding claims 9 and 13, Hamalainen & Kohno disclose as cited in claim 1. Hamalainen further discloses the base station is coupled to an external data and/or voice network and at least one of the uplink and downlink data includes information exchanged via the Internet (See figs. 1B, 2 and 16).

Claims 28, 32, 41 and 45 are rejected for the same reasons as set forth in claims 9 and 13, as apparatus.

Regarding claim 14, Hamalainen & Kohno disclose as cited in claim 1. Kohno further discloses the smart antenna includes a plurality of antenna elements and a mechanism for uplink spatial processing signals received at the antenna elements according to a set of receive weighting parameters determined from the signal received at the antenna elements, and a mechanism for downlink spatial processing a signal for transmission according to a set of transmit weighting parameters, wherein the downlink strategy determining includes determining the set of uplink weighting parameters from the received uplink response signal and determining the set of downlink weighting parameters from the set of uplink weighting parameters (See figs. 2, 7 and col. 5 line 6 to col. 6 line 34, col. 10 lines 3-52).

Claims 46 and 73 are rejected for the same reasons as set forth in claim 14, as apparatus.

Regarding claim 16, Hamalainen & Kohno disclose as cited in claim 15. Hamalainen further discloses the uplink response signal includes acknowledgement

data sent by the mobile terminal in response to each frame from the base station received by the mobile terminal (See figs. 9-10).

Claim 48 is rejected for the same reasons as set forth in claim 16, as apparatus.

Regarding claim 17, Hamalainen & Kohno disclose as cited in claim 14. Kohno further discloses the downlink strategy determining step determines the transmit weighting parameters using a blind method (See fig. 5 and col. 8 line 27 to col. 9 line 32).

Claim 49 is rejected for the same reasons as set forth in claim 17, as apparatus.

Regarding claim 19, Hamalainen & Kohno disclose as cited in claim 15.

Hamalainen further discloses the steps of: providing an associated downlink channel AGCH, TCH from the base station to the mobile station, the associated downlink channel associated and having a predefined relationship with the uplink channel; and sending an uplink acknowledgement signal from the base station to the mobile terminal on the associated downlink channel in response to each uplink frame from the mobile terminal received by the base station (See figs. 2, 9-10 and col. 10 line 35 to col. 11 line 14, col. 13 line 9 to col. 14 line 24).

Claims 51 and 76 are rejected for the same reasons as set forth in claim 19, as apparatus.

Regarding claim 20, Hamalainen & Kohno disclose as cited in claim 1.

Hamalainen further discloses the mobile terminal is one of a set of mobile terminals able to communicate with the base station, each mobile terminal able to communicate on the uplink on a distinct uplink channel of a set of provided uplink channels and on the

Art Unit: 2682

downlink on a distinct downlink channel of a set of provided downlink channels (See figs. 1B, 2 and col. 4 lines 33-41, col. 13 lines 13-20). However, they do not mention that the total data carrying capacity of the set of provided downlink channels being greater than the total data carrying capacity of the set of provided uplink channels in accommodating the asymmetry between uplink and downlink traffic data communication. Setting up total data carrying capacity between uplink channels and downlink channels the same or different (greater or smaller) is purely depending on the designer's intention in accommodating the users' need; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set the total data carrying capacity between uplink channels and downlink channels the same or different (greater or smaller) in order to utilize maximum the capacity of the system as well as to accommodate the user's desires.

Claims 52 and 74-75 are rejected for the same reasons as set forth in claim 20, as apparatus.

Regarding claim 77, Hamalainen & Kohno disclose as cited in claim 73. Kohno further discloses the determined downlink smart antenna processing strategy includes the received signal level (See col. 6 lines 4-19) that inherently includes the effects of co-channel interference.

Regarding claim 78, Hamalainen & Kohno disclose as cited in claim 71. Hamalainen further discloses the set of mobile terminals being transmitted to by the base station during a first frame on the first downlink channel AGCH is a subset of the set of mobile terminals that transmitted uplink response signals on the associated

Art Unit: 2682

channel RACH on the uplink associated with the first downlink channel during the most recently occurring frame to the first frame (See fig. 9 and col. 13 lines 9-20).

2. Claims 18 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamalainen et al. (6,167,248) in view of Kohno et al. (6,763,062) as applied to claims 14 and 46 above, and further in view of Speight (JP 2000031896).

Regarding claim 18, Hamalainen & Kohno disclose as cited in claim 14.

Hamalainen further discloses the uplink response signal includes training data (See fig. 13). However, they do not mention that the downlink strategy determining step determines the transmit weighting parameters using the training data in the most recently received uplink response signal. Speight teaches the downlink strategy determining step, performed by the base station, determines the transmit weighting parameters using the training data of the received signal (See provided English translation). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the Speight's teaching in the system of Hamalainen & Kohno in determining the transmit weighting parameters for the advantage of expanding the capability of the system to various analysis tools by providing an alternative way in determining weighting values.

Claim 50 is rejected for the same reasons as set forth in claim 18, as apparatus.

Conclusion

Art Unit: 2682

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Tuan Tran** whose telephone number is **(703) 605-4255**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Vivian Chin**, can be reached at **(703) 308-6739**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

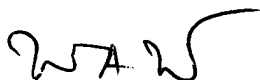
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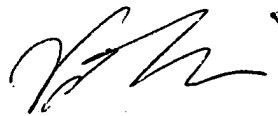
(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.


Tuan Tran

AU 2682


VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

2/7/05

Application/Control Number: 09/676,887

Page 10

Art Unit: 2682

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